

LISTING OF CLAIMS:

1-43 (Canceled)

44. (Currently amended) A method for mechanochemical polishing, comprising:

preparing a chemical solution that includes hydrogen peroxide water and abrasive grains made of chromium (III) oxide;

polishing a surface of a SiC wafer by mechanochemical polishing to remove SiC from the surface of the wafer using the chemical solution and a polishing cloth with a processing pressure having a range of approximately 0.1–3.0 kgf/cm²; and

increasing oxygen concentration on the surface of the SiC wafer to promote the formation of an oxide of the SiC wafer by performing the polishing in the presence of the hydrogen peroxide water, wherein the oxide of the SiC wafer is formed by catalysis of the chromium (III) oxide, and the oxygen concentration around the polishing surface of the SiC wafer is increased by supplying the hydrogen peroxide water to the polishing surface to promote the formation of the oxide of the SiC wafer.

45. (Canceled)

46. (Canceled)

47. (Previously presented) The method according to claim 44, wherein the method further includes coating the cloth with grains of manganese dioxide.

48. (Previously presented) The method according to claim 44, wherein the method includes dropping the chemical solution onto the polishing cloth on the surface of the SiC wafer.

49. (Previously presented) The method according to claim 44, wherein the method includes adding a solid powder oxidizing agent to the chemical solution.

50. (Previously presented) The method according to claim 49, wherein the solid powder includes at least one of manganese dioxide and dimanganese trioxide.

51. (Previously presented) The method according to claim 49, wherein the method includes polishing the surface of the semiconductor wafer on a member that moves relatively to the semiconductor wafer, wherein the solid powder is located on the member.

52. (Previously presented) The method according to claim 49, wherein the method includes dropping the chemical solution, in which the solid powder is dispersed, onto the surface of the SiC wafer.

53. (Previously presented) The method according to claim 44, wherein the method includes supplying a solid powder made of a material other than chromium (III) oxide to the surface of the semiconductor wafer when the surface is polished, wherein the material catalyzes a chemical reaction.

54. (Previously presented) The method according to claim 53, wherein the method includes dispersing the solid powder in a liquid and dropping the liquid and the powder on the surface of the semiconductor wafer.

55. (Previously presented) The method according to claim 53, wherein the method includes placing the solid powder on a member that is moved relatively to and contacts the surface of the SiC wafer when the surface is polished.

56. (Previously presented) The method according to claim 53, wherein the solid powder contains at least one of titanium dioxide, cadmium sulfide, and diindium trioxide.

57. (Previously presented) The method according to claim 53, wherein the method includes irradiating the solid powder with light when the surface of the semiconductor wafer is polished.

58. (Previously presented) The method according to claim 44, wherein the method includes heating the surface of the semiconductor wafer during the polishing.

59. (Canceled)

60. (Canceled)

61. (Currently amended) A mechanochemical polishing apparatus, comprising:

a table on which an SiC wafer is held;

a polishing cloth, wherein the polishing cloth has a surface that faces the table and the polishing cloth is movable relatively with respect to the SiC wafer to polish a surface of the SiC wafer and to remove SiC from the surface of the wafer using abrasive grains made of chromium (III) oxide, wherein the polishing cloth ~~has a cavity or gap that extends in a direction perpendicular to the surface of the polishing cloth~~ is porous; and

supply means for supplying a chemical solution including the abrasive grains and hydrogen peroxide water to the surface of the SiC wafer, so that an amount of oxygen reacting with the SiC wafer in the polishing cloth is increased, wherein an oxide of the SiC wafer is formed by catalysis of the chromium (III) oxide, and the concentration of oxygen on the polishing surface of the SiC wafer is increased by supplying the hydrogen peroxide water to the polishing surface to promote the formation of the oxide of the SiC wafer.

62. (Previously presented) The apparatus according to claim 61, wherein said supply means is an injector located above the member for supplying the chemical solution to the surface of the semiconductor.

63. (Previously presented) The apparatus according to claim 61, further comprising heating means for heating the surface of the semiconductor wafer when the surface is polished.

64. (Previously presented) The apparatus according to claim 61, further comprising an injector for supplying a liquid to the surface of the semiconductor wafer, the liquid including a solid powder made of a material other than chromium (III) oxide, for catalyzing a chemical reaction.

65. (Previously presented) The apparatus according to claim 61, further comprising a light source for irradiating the solid powder with light.

66. (Canceled)

67. (Previously presented) The apparatus according to claim 61, wherein the polishing cloth is made of one selected from a group consisting of synthetic fibers, glass fibers, natural fibers, synthetic resin and natural resin.

68. (Previously presented) The apparatus according to claim 61, wherein the polishing cloth includes an unwoven type polishing cloth in which complex fabric bodies are impregnated with resin serving as a binding material between fibers or in which a resin layer has a continuously foamed structure.

69. (Previously presented) The apparatus according to claim 61, wherein the polishing cloth is comprised of suede.

70-73 (Canceled)

74. (Previously presented) The method according to claim 44, wherein the polishing cloth is comprised of suede.

75. (Previously presented) The method according to claim 44, further comprising increasing the oxygen concentration reacting with the SiC wafer during the increasing of the oxygen concentration on the surface of the SiC wafer.

76. (Previously presented) The method according to claim 44, wherein the abrasive gains have a grain size of $5\mu\text{m}$ or less.

77. (Previously presented) The method according to claim 44, wherein the polishing is performed for 10 minutes or more when the processing pressure is in a range of $0.6\text{--}3.0\text{ kgf/cm}^2$.

78. (Previously presented) The mechanochemical polishing apparatus according to claim 61, further comprising an oxygen atmosphere generating chamber for generating and maintaining

an oxygen atmosphere, wherein the polishing cloth and the table with the SiC wafer are located within the oxygen atmosphere generating chamber.

79. (Previously presented) The mechanochemical polishing apparatus according to claim 61, further comprising a polishing platen having a surface on which the polishing cloth is arranged, wherein:

the polishing platen has a through hole for supplying oxygen gas; and

the polishing cloth is provided such that the oxygen gas from the through hole is supplied to the SiC wafer through the polishing cloth.